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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,300	01/23/2001	Henning Andersen	Q62611	3916

7590 02/09/2005

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EXAMINER

CHAU, COREY P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,300

Applicant(s)

ANDERSEN ET AL

Examiner

Corey P Chau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 17 is objected to because of the following informalities: On lines 8, 12, 13, recites "said test signal", which should be replace with "said test signals". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 17, 22-27, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 17 recites the limitation "the in-situ" in line 1.

Claims 22-26 recites the limitation "said output signal " in line 1.

Claim 33 recites the limitation "said microphone " in line 2.

Claim 33 recites the limitation "said processor " in line 2.

There is insufficient antecedent basis for this limitation in the claim.
5. Regarding Claims 22-26, it is unclear to the Examiner as to where in the "output signal" is located in the hearing aid system.
6. Regarding Claim 27, it is unclear to the Examiner as to where an amplifier output stage is connected to the hearing aid system and how it works with the hearing aid system.

7. Regarding Claim 33, it is unclear to the Examiner as to how the "said process" works in the hearing aid system.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 17-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann et al. (hereafter as Lindemann) in view of U.S. Patent No. 5321758 to Charpentier et al (hereafter as Charpentier), and further in view of U.S. Patent No. 5012520 to Steeger..

10. Regarding Claim 17, Lindemann discloses a hearing aid system for the in-situ fitting of hearing aids (i.e. hearing aid with in situ testing capability), said system comprising a hearing aid (100,200), said hearing aid having a microphone (102,202), a signal processor (Figs. 1 and 2), an output transducer (118,212)(column 2, lines 55-67) and a control signal receiver means (112,114,116, 204). Lindemann discloses the hearing aid receives control signals from a hearing aid fitter, but only generally; no specific hardware or software is taught. Therefore, it would have been obvious to one of ordinary skill to seek known methods for sending control signals to the hearing aid. Steeger for example discloses a hearing aid with wireless remote control to emit control signals to the hearing aid (abstract). The control signals may be to set a volume, or turn

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the hearing aid unit off and on (Figs. 1 and 2; column 4, lines 15-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any known method of sending control signals to the digital signal processor of the hearing aid in order to control the functions of the hearing aid in Lindemann, such as that of Steeger. Therefore, it would have been obvious to modify the hearing aid of Lindemann with the teaching of Steeger to utilize the remote control (i.e. control device) to send control signals to the hearing aid in order to control functions of the hearing aid. Lindemann as modified discloses said control device being adapted for communication with said control signal receiver means for selective generation and feeding to said output transducer of test signals (i.e. in response to control signals from the hearing aid fitter, the controller 218 selectively couples either the hearing rehabilitator 216 in the normal hearing aid mode or the switch 222 to the digital-to-analog converter 206 for using the hearing aid 200 in a diagnostic test mode)(Figs. 1 and 2; column 7, lines 18-37), and switch means (112,218) for optionally switching between a first position and a second position (column 7, lines 18-37). Lindemann as modified discloses gain adjustments, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known methods for controlling gain in a hearing aid. Charpentier for example discloses a power efficient hearing aid comprising a final attenuator, which includes three resistors and four switches; and a final amplifier, wherein the output of the final amplifier are applied to a final attenuator. A separate bit provided by an EEPROM controls each of the switches. The amount of attenuation provided by any combination of resistors depends on the relative

impedances of the combined resistors and the receiver. The output signal of the final attenuator drives the receiver, which produces sound waves in the ear of the user (column 4, lines 1-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any known method of gain adjustment for hearing aids in order to realize the needed gain control function in Lindemann as modified, such as that of Charpentier. Therefore it would have been obvious to modify the hearing aid of Lindemann as modified with the teaching of Charpentier to incorporate an attenuator and an amplifier (not shown in Lindemann, but clearly needed) after the digital to analog converter to provide an attenuation factor and suitable output power for a receiver (i.e. a voltage dividing network adapted to attenuate said test signal as fed to said output transducer)(the attenuator and the amplifier would be placed between 206 and 212 of Fig. 2 of Lindemann). Therefore switch means (112,218) for optionally switching between a first position and a second position, said switch means acting in said first position (i.e. diagnostic test mode) to connect said voltage dividing network to attenuate said test signal, and said switch means acting in said second position (i.e. normal hearing aid mode) to bypass said voltage dividing network in order to feed said test signal directly to said output transducer (Figs. 1 and 2).

11. All elements of Claim 18 are comprehended by Claim 17. Claim 18 is rejected to reasons stated above apropos of Claim 17.

12. All elements of Claim 19 are comprehended by Claim 17. Claim 19 is rejected to reasons stated above apropos of Claim 17 (Figs. 1 and 2; column 4, lines 15-20).

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13. Regarding Claim 20, Lindemann as modified discloses said hearing aid is a digital hearing aid (200)(Fig. 2).

14. Regarding Claim 21, Lindemann as modified discloses said voltage dividing network comprises at least two fixed value resistors (RA,RB,RC)(Charpentier, Fig. 1-2; column 4, lines 1-18).

15. Regarding Claim 22, a best understood with regarding the 112, 2nd problem as mention above, Lindemann as modified discloses an output signal is delivered by an digital/analogue converter (206).

16. Regarding Claim 26, a best understood with regarding the 112, 2nd problem as mention above, Lindemann as modified discloses an output signal is tapped from said voltage dividing network (RA,RB,RC)(Charpentier, Fig. 1-2; column 4, lines 1-18).

17. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann in view of U.S. Patent No. 5321758 to Charpentier, further in view of U.S. Patent No. 5012520 to Steeger as applied to claims 17-22 and 26 above, and even more further in view of U.S. Patent No. 5881159 to Aceti et al (hereafter as Aceti)..

18. Regarding Claim 23, a best understood with regarding the 112, 2nd problem as mention above, Lindemann as modified discloses a hearing aid system comprising an amplifier, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known amplifiers to send signals to the receiver. Aceti for example discloses a hearing aid comprising a class-D

amplifier (i.e. switching amplifier) that is power efficient in order to extend the battery life of the hearing aid (column 2, lines 54-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any known amplifier for hearing aids in order to realize the needed power efficiency in Lindemann as modified, such as that of Aceti. Therefore, it would have been obvious to modify the hearing aid of Lindemann as modified with the teaching of Aceti to utilize a class-D amplifier to extend the battery life of the hearing aid.

19. Claims 24, 25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann in view of U.S. Patent No. 5321758 to Charpentier, further in view of U.S. Patent No. 5012520 to Steeger as applied to claims 17-22 and 26 above, and even more further in view of U.S. Patent No. 5701106 to Pikkarainen et al. (hereafter as Pikkarainen).

20. Regarding Claims 24 and 25, a best understood with regarding the 112, 2nd problem as mention above, Lindemann as modified discloses hearing aid comprising a D/A converter, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known D/A converters to send signals to the receiver. Pikkarainen for example discloses a sigma delta D/A converter wherein the advantages of a sigma delta D/A converter are high accuracy, good reliability, good stability and good linearity (column 3, lines 55-57). I would have been obvious to one having ordinary skill in the art at the time the invention to utilize any known converter in order to converter the digital signal to analog and send the signal to

the receiver, such as that of Pikkarainen. Therefore, it would have been obvious to modify the hearing aid of Lindemann as modified with the teaching of Pikkarainen to utilize a sigma delta D/A converter in order to have high accuracy, good reliability, good stability and good linearity.

21. All elements of Claim 27 are comprehended by Claim 17. Claim 27 is rejected to reasons stated above apropos of Claim 17

22. Claims 28-30 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6442279 to Preves et al. (hereafter as Preves).

23. Regarding Claim 28, Preves discloses a hearing aid adapted for in-situ fitting (Fig. 1), but does not expressly disclose an amplifier. However it would have been obvious to one having ordinary skill in art to provide such an amplifier in order to drive an output transducer. Preves as modified discloses said hearing aid comprising an amplifier, attenuation means (32) and an output transducer (44), and said hearing aid being adapted for selective operation in at least one of a first mode and a second mode (i.e. a switch in an electrical circuit to enable selection of attenuation of excessive noise levels or normal amplification)(abstract; Fig. 2), said amplifier being adapted to generate, in said first mode (i.e. switch closed), an amplifier output signal within a first dynamic range, extending between an amplifier noise level and a maximum output level (i.e. the switch 26, when closed, shorts out the noise protection resistor 32 in the circuit 34 and enables normal amplification in accordance with the wearer's specific need)(Figs. 2, 3, and 4; column 4, lines 40-49), said attenuation means being adapted

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to attenuate, in said second mode (i.e. switch open), said amplifier output signal so as to extend within a second dynamic range (i.e. when the switch 26 is open, however, the circuit path is through the noise protection resistor 32 and the signal is significantly reduced)(Figs. 2, 3, and 4; column 4, lines 40-49; column 5, lines 23-37), which second dynamic range is shifted to lower levels relative to said first dynamic range (abstract; column 4, lines 40-49).

24. Regarding Claim 29, Preves as modified discloses said attenuation means comprises a voltage dividing resistor network (32)(Figs. 2, 3, and 4; column 4, lines 40-49; column 5, lines 23-37).

25. Regarding Claim 30, Preves as modified discloses said resistor network comprises fixed value resistors (32)(Figs. 2, 3, and 4; column 4, lines 40-49; column 5, lines 23-37).

26. Regarding Claim 32, Preves as modified discloses said attenuation means (i.e. voltage dividing resistor network) comprises means for attenuating an output signal from said amplifier (Figs. 2, 3, and 4; column 4, lines 40-49; column 5, lines 23-37).

27. Regarding Claim 33, a best understood with regarding the 112, 2nd problem as mention above, Preves as modified discloses a selector switch (26,52) adapted to selectively connect a microphone (28) to, or disconnect said microphone from, a processor (32)(i.e. when the switch is open, the resistor 32 processes the signal)(Figs. 2, 3, and 4; column 4, lines 40-49; column 5, lines 23-37).

28. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6442279 to Preves in view of U.S. Patent No. 5881159 to Aceti.

29. Regarding Claim 31, Preves as modified discloses an amplifier, but does not expressly disclose a switch mode amplifier. Aceti for example discloses a hearing aid comprising a class-D amplifier (i.e. switching amplifier) that is power efficient in order to extend the battery life of the hearing aid (column 2, lines 43-53). Therefore, it would have been obvious to modify the hearing aid of Preves as modified with the teaching of Aceti to utilize a class-D amplifier to extend the battery life of the hearing aid.

Response to Arguments

30. Applicant's arguments filed August 11, 2004 have been fully considered but they are not persuasive.

31. In response to applicant's argument on page 8, that Lindemann's way of attenuation incurs losses and that it is not linear with frequency and thus not well defined because the output characteristic of the receiver will be dependent on the impedance of the receiver, which may vary depending of the frequency, it is noted that the features upon which applicant relies (i.e., linear with frequency) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

32. With respect to the applicant's arguments on page 9, stating that "Claim 21 distinguishes Lindemann in referring to a voltage dividing network", has been noted.

The Examiner however respectfully disagrees. Lindemann as modified discloses a **voltage dividing network adapted to attenuate said test signal** as fed to said output transducer. See Charpentier, column 4, lines 1-18.

33. With respect to the applicant's arguments on page 9, stating that "Lindemann does not teach a hearing aid adapted for selective operation in a first mode and a second mode", has been noted. The Examiner however respectfully disagrees. Specifically Lindemann as modified discloses "**in response to control signals from the hearing aid fitter, the controller 218 selectively couples either the hearing rehabilitator 216 in the normal hearing aid mode or the switch 222 to the digital-to-analog converter 206 for using the hearing aid 200 in a diagnostic test mode**". See Figs. 1 and 2; column 7, lines 18-37.

Conclusion

34. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P Chau whose telephone number is (703)305-0683. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Sinh can be reached on (703)305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 7, 2005

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